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Molecular cloning of a cDNA encoding diacylglycerol kinase (DGK) in Arabidopsis thaliana.

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Diacylglycerol kinase (DGK) synthesizes phosphatidic acid from diacylglycerol, an activator of protein kinase C (PKC), to resynthesize phosphatidylinositols. The structure of DGK has not been characterized in plants. We report the cloning of a cDNA, cATDGK1, encoding DGK from Arabidopsis thaliana. The cATDGK1 CDNA contains an open reading frame of 2184 bp, and encodes a putative protein of 728 amino acids with a predicted molecular mass of 79.4 kDa. The deduced ATDGK1 amino acid sequence exhibits significant similarity to that of rat, pig, and Drosophila DGKs. The ATDGK1 mRNA was detected in roots, shoots, and leaves. Southern blot analysis suggests that the ATDGK1 gene is a single-copy gene. The existence of DGK as well as phospholipase C suggests the existence of PKC in plants.

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